ECOSYSTEM-BASED MANAGEMENT INDICES AND INFORMATION

Ecosystem Goal: Sustainability (for consumptive and non-consumptive uses)

Trophic level of the catch

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To determine whether North Pacific fisheries were "fishing-down" the food web, the total catch, trophic level of the catch, and the Pauly et al. (2000) Fishery Is Balanced (FIB) Index in the eastern Bering Sea, Aleutian Islands, and Gulf of Alaska areas were determined. Total catch levels and composition for the three regions show the dominance of walleye pollock in the catch from around the 1970's to at least the early 1990's (Figure 133). Other dominant species groups in the catch were rockfish prior to the 1970's in the Aleutian Islands and the Gulf of Alaska, and Atka mackerel in the 1990's in the Aleutian Islands. All these species are primarily zooplankton consumers and thus show alternation of similar trophic level species in the catch rather than a removal of a top-level predator and subsequent targetting of a lower trophic level prey.

Stability in the trophic level of the total fish and invertebrate catches in the eastern Bering Sea, Aleutian Islands, and Gulf of Alaska (Figure 134) are another indication that the "fishing-down" effect is not occurring in these regions. Although there has been a general increase in the amount of catch since the late 1960's in all areas, the trophic level of the catch has been high and stable over the last 25 years.

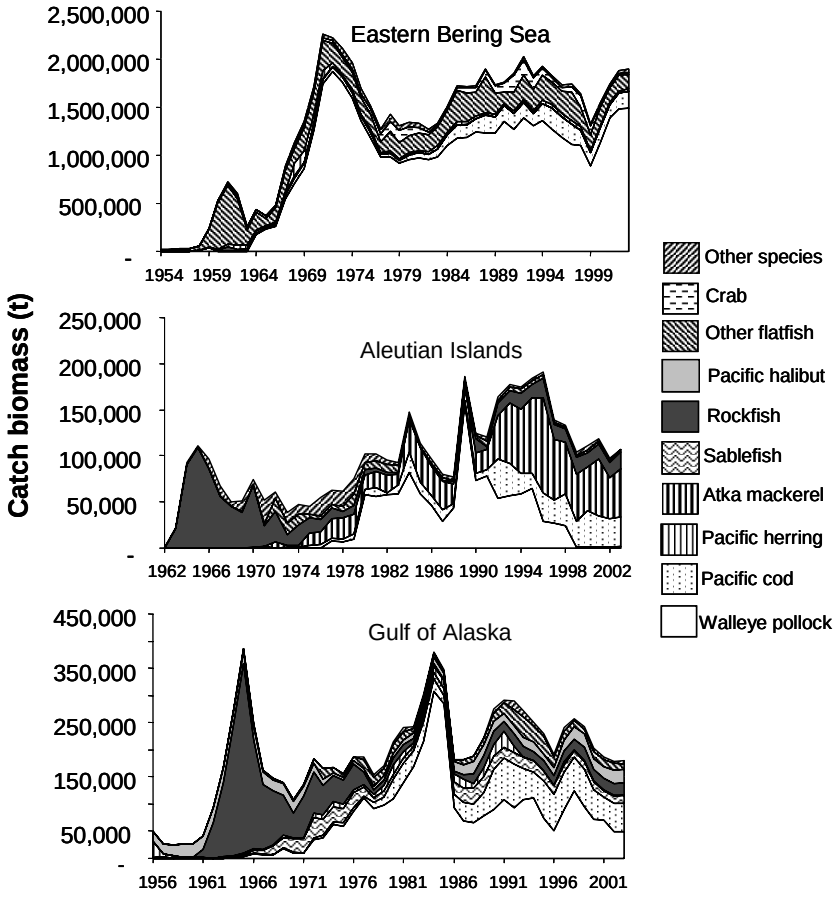

Figure 133. Total catch biomass (except salmon) in the EBS, GOA, and AI through 2003.

The Fishery in Balance Index (FIB) of Pauly et al. (2000) was developed to ascertain whether trophic level catch trends are a reflection of deliberate choice or of a fishing down the food web effect. This index declines only when catches do not increase as expected when moving down the food web, relative to an initial baseline year. The FIB index for each Alaskan region was calculated (Figure 134) to allow an assessment of the ecological balance of the fisheries. Unlike other regions in which this index has been calculated, such as the Northwest Atlantic, catches and trophic level of the catch in the EBS, AI, and GOA have been relatively constant and suggest an ecological balance in the catch patterns.

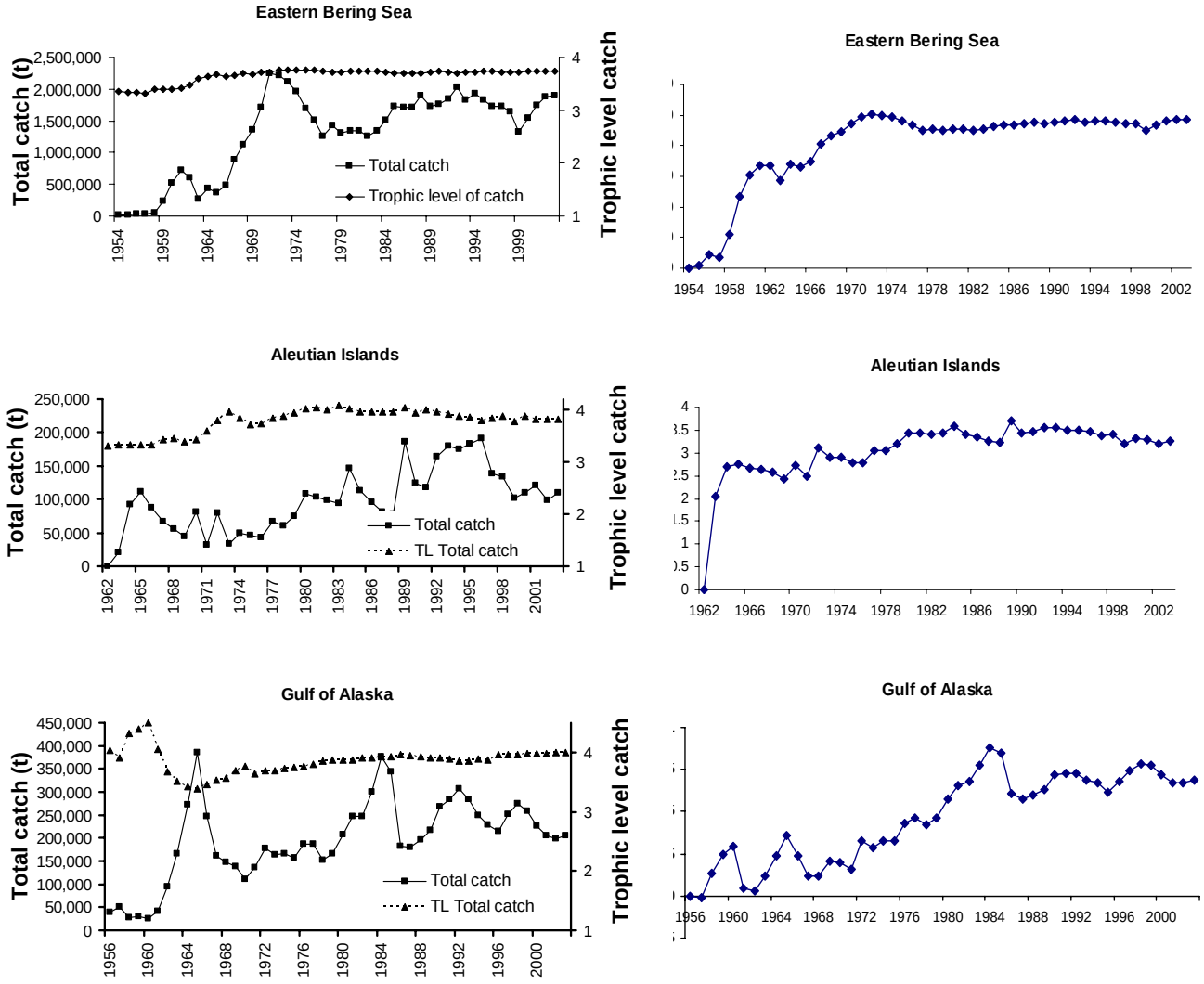

Figure 134. Total catch (groundfish, herring shellfish, and halibut) and trophic level of total catch in the EBS/AI and GOA through 2003 (left column). Right column shows FIB index values for the EBS, AI and GOA through 2003.